BURSITIS

A. GENERAL CONSIDERATIONS

Bursa are closed fluid sacs present where tendons and muscles move over bony prominences. They facilitate the motion.

Bursitis is an acute or chronic inflammation of a bursa. It can be a result of direct trauma, chronic overuse, Gout, Rheumatoid Arthritis, or infection (ex puncture wound).

B. ESSENTIALS OF DIAGNOSIS

1. Localized pain is the presenting complaint. This pain often radiates to the involved limb.
2. Swelling depends on which bursa is involved.
3. Redness again, depends on which bursa is involved. If the bursa is superficial (prepatellar, olecranon), you will see this. It does not necessarily indicate sepsis.
4. Tenderness to palpation is a constant feature.
5. Decreased ROM due to the pain from stressing the inflamed bursa.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Adhesions
2. Muscle atrophy from disuse
3. Calcium deposits

F. TREATMENT

1. Immobilize the affected part for 7 days
2. Light duty (for the affected part) for an additional 7 days.
3. Ice when acute, heat when chronic.
4. Medications

    a. Mild - ASA
    b. Moderate - Motrin
    c. Severe - Indocin (25mg TID x 5 days)

5. Begin passive and active ROM when pain subsides.

G. DISPOSITION

1. If the condition becomes chronic or if complications develop, refer the patient to a Medical Officer.

COSTOCHONDRITIS

A. GENERAL CONSIDERATIONS

Costochondritis is a painful inflammation of the costochondral cartilages. It may be caused by trauma, but it may also occur without a history of trauma. It is the most common type of anterior chest pain.

B. ESSENTIALS OF DIAGNOSIS

1. You may see redness and swelling at the site. However, these are typically absent.
2. Usually a sharp localized pain, but may present as a dull aching pain and tenderness of the affected cartilage.
3. The pain may mimic the pain of a Myocardial Infarction.
4. The patient can pinpoint the exact location while the examiner performs bilateral axillary compression.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. None.

F. TREATMENT

1. Give analgesics such as Aspirin or Acetaminophen.
2. Give nonsteroidal anti-inflammatory medications.
3. Light duty for short duration.

G. DISPOSITION

1. Swelling and tenderness usually disappear without therapy but may recur. If symptoms intensify despite treatment, refer the patient to a Medical Officer for evaluation.
2. If you are unable to pinpoint a musculoskeletal location or <u>any</u> doubt exists if this is cardiac, contact a Medical Officer for advise.

GOUT

A. GENERAL CONSIDERATIONS

Gout is a heterogenous disorder in which any of the following may occur:

1. Hyperuricemia
2. Urate crystal induced arthritis (i.e. urate crystals deposited in the joints and tendons)
3. Tophi in and around the joints
4. Uric acid kidney stones
5. Renal disease

Patients go for many years with hyperuricemia. Some of these patients go on to show symptoms of the disease. Almost without exception, arthritis is the first symptom to develop.

B. ESSENTIALS OF DIAGNOSIS

1. Sudden onset of monoarthritis (some show polyarthritis). This is intense pain that even makes the weight of the bedsheets intolerable.
2. In males, almost all the initial attacks occur in the 40 through 50 age group.
3. The most common join involved is the first MTP joint of the foot. Other common areas included the dorsum of the foot, ankle, knee and occasionally the joints of the upper extremities.
4. The joint is red, hot and swollen.
5. Some patients experience fever and chills with the acute onset.

C. LABORATORY TESTS

1. CBC
2. Urinalysis

D. LABORATORY FINDINGS

1. Moderate leukocytosis is common during an acute attack.
2. Uric Acid crystals may be seen in the urinary sediment. Some patients may show proteinuria long before the onset of renal disease.

E. COMPLICATIONS

1. Chronic Tophaceous Arthritis.
2. An increased incidence of Diabetes, Hypertension and renal disease is found.

F. TREATMENT

1. PO Colchicine causes nausea, vomiting and diarrhea at the dose needed and is not recommended (not AMAL, but the patient may have some from prior attack).
2. PO Indocin at 50mg TID for five (5) days.
3. Motrin may be used instead.
4. Probenecid should **NOT** be started during an acute attack.
5. Bed rest.

D. DISPOSITION

1. Contact a Medical Officer for further advice.

HERNIATED NUCLEUS PULPOSUS

A. GENERAL CONSIDERATIONS

The prolapse of a weakened intervertebral disk into the spinal canal will compress the nerve root, causing pain and variable loss of function. The herniation of the disk may be the result of degenerative disease or trauma. The most common locations are in the lumbar or cervical spine.

B. ESSENTIALS OF DIAGNOSIS

1. Sudden and severe pain radiating along the dermatome distribution of the compressed nerve.
2. Pain is increased by movement, coughing, laughing, Valsalva's maneuver, or straining at stool.
3. Motor signs include decreased deep tendon reflexes or motor weakness of muscle groups supplied by the affected nerve.
4. Numbness and paresthesia's may be described.
5. Involvement is usually unilateral.
6. Lumbar disk herniation causes positive straight leg raising.
7. Cervical disk disease may produce pain in the neck and arm upon flexion of the neck.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Muscle atrophy and sensory deficits.
2. Bowel or bladder incontinence suggests the presence of Cauda Equina Syndrome. This is a SURGICAL EMERGENCY.

F. TREATMENT

1. Bed rest using hard mattress.
2. The patient may feel more comfortable in the supine position with several pillows under his knees.
3. Analgesics prn.
4. Muscle relaxants, including Valium 5mg po qid if needed.
5. Warm moist heat to area.

G. DISPOSITION

1. Refer patient to Medical Officer.
2. If Cauda Equina Syndrome develops, immediate MEDEVAC is necessary.

INGUINAL HERNIA

A. GENERAL CONSIDERATIONS

Inguinal hernias are very common and their repair represents the most common major surgical procedure performed in the United States. The incidence is much higher in males, perhaps due to the decent of the testicles through the abdominal wall during fetal life. There are two types of inguinal hernias:

1. Indirect - more common in young males. You see a higher rate of complications with these.
2. Direct - more common in older males. The "wear and tear" hernia. They are much less likely to develop complications.

To fully discuss hernias, some terms need to be understood:

1. Reducible - the herniated sac goes back into the abdominal cavity (either spontaneously or with manual pressure).
2. Incarcerated - the herniated sac is trapped bulging out of the hernia defect so that the contents are extra-abdominal.
3. Strangulated - if the herniated sac remains incarcerated, swelling develops and cuts off the blood supply to the involved segment.

B. ESSENTIALS OF DIAGNOSIS

1. Sense of fullness or dragging in the groin.
2. Discomfort may radiate to the testicle, usually associated with heavy exercise, coughing, or straining.
3. Bulge or mass in the inguinal region. **The most common symptom.**
4. Palpable on digital exam.
5. Often reduces when the patient is supine.

C. LABORATORY TESTS

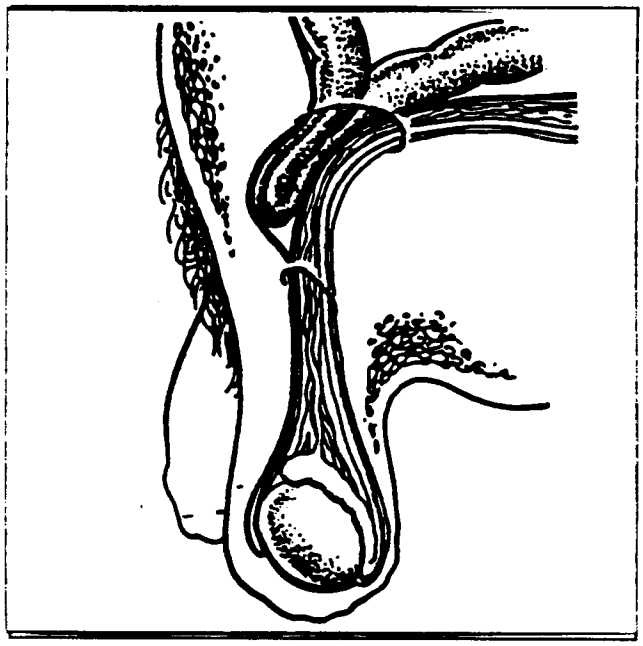
1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Incarceration or strangulation.
2. May reoccur after repair.



F. TREATMENT

1. Advise patient of the symptoms of strangulation; direct patient to avoid heavy lifting or straining.

2. For incarceration or strangulation place the patient supine and then elevate the hips. Sedate as necessary to promote relaxation.

3. With the suspected strangulation place the patient on the appendicitis antibiotics protocol and Lactated Ringers (125cc/hr)

G. DISPOSITION

1. Immediate MEDEVAC for a strangulated (or incarcerated hernia after four hours) hernias.
2. When fully reducible, a routine surgery consult is indicated. The goal is to repair these BEFORE complications develop. If you are going to deploy, get the surgical consultation PRIOR to getting underway. If you are underway, get the consultation at the next available port.

MUSCULOSKELETAL SPRAINS OF THE EXTREMITIES

A. GENERAL CONSIDERATIONS

A sprain results from trauma such as hyperextension or hyperflexion. It is a tear or rupture of the fibers and ligaments supporting the joint. Joints that are commonly involved are the knee and ankle.

An important key to remember - if the knee swells (joint effusion, NOT extracapsular soft tissue swelling) immediately after trauma, hemarthrosis is probably present. The patient should ideally undergo arthroscopy ASAP (if the operational setting allows).

B. ESSENTIALS OF DIAGNOSIS

1. History of trauma with resultant acute onset of symptoms.
2. Joint effusion:
    a. If immediate, suspect hemarthrosis.
3. Localized tenderness to the ligament involved (see illustration):
    a. Knee - medial and lateral collateral ligaments, anterior and posterior cruciates, and medial and lateral meniscus.
    b. Ankle - anterior and posterior talofibular ligaments, and the calcanofibular ligament.
4. Check the integrity of the specific ligaments (see illustration).
5. Range of motion (ROM) limited by pain, effusion, or joint foreign body (bone chip, torn meniscus, etc.).
6. Assure that no neurovascular compromise exists.
7. Check the joint above and below (at risk for coexisting injury).

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Coexisting fracture and/or neurovascular injury.
2. Chronic joint instability.
3. Post traumatic arthritis.

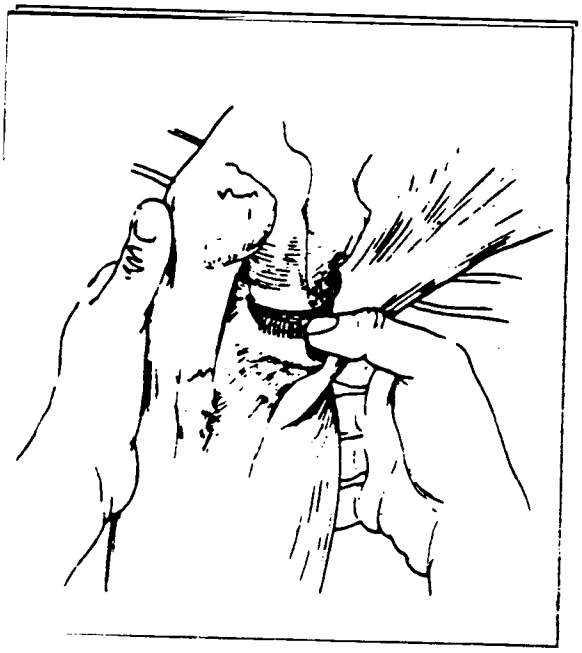
F. TREATMENT

1. Immobilize the joint (neutral position), elevate, and apply ice for the first 24-48 hours.
2. If a weight bearing joint is involved, bed rest is mandatory.
3. Indomethacin or Ibuprofen for pain control and antiinflammatory effect.

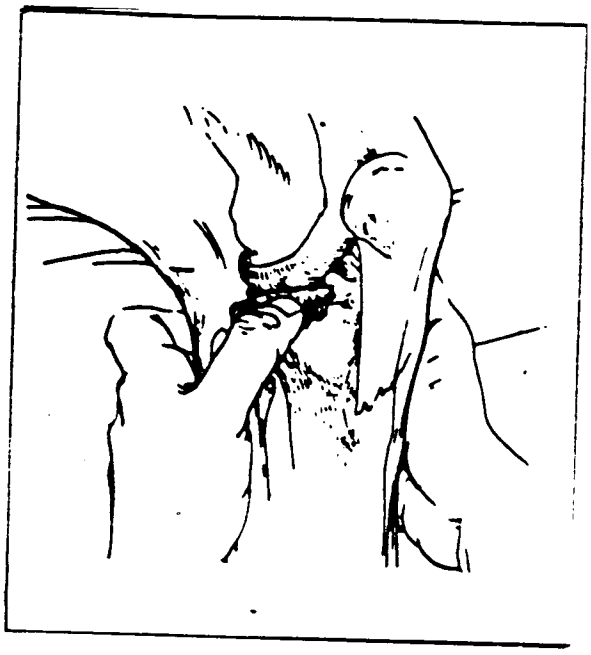
G. DISPOSITION

1. If a fracture is suspected, MEDEVAC.
2. If little to no improvement occurs in 48 hours, contact a Medical Officer for further advice.
3. If there is an immediate knee effusion (probable hemarthrosis), MEDEVAC.
4. If there is joint instability, locking of a joint, or neurovascular compromise, MEDEVAC.

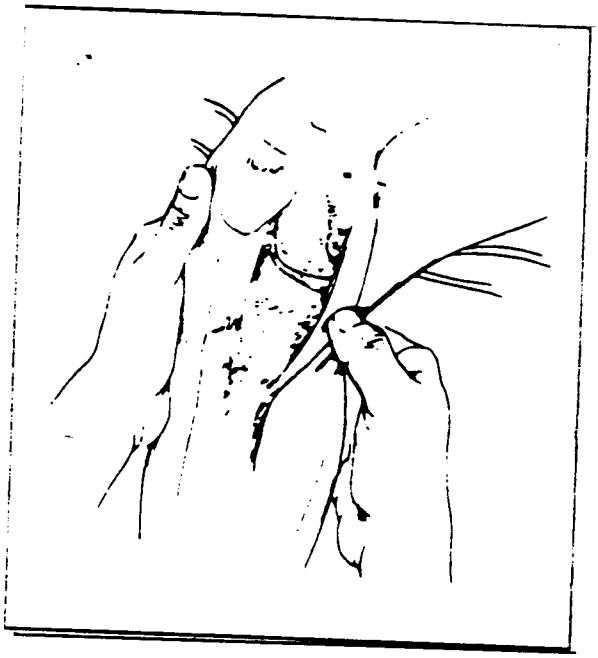
SEE ILLUSTRATIONS NEXT PAGE



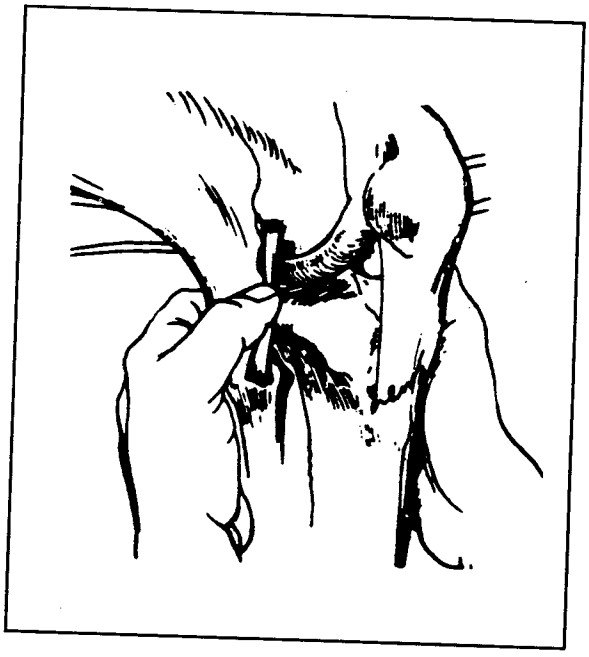
Medial Meniscus



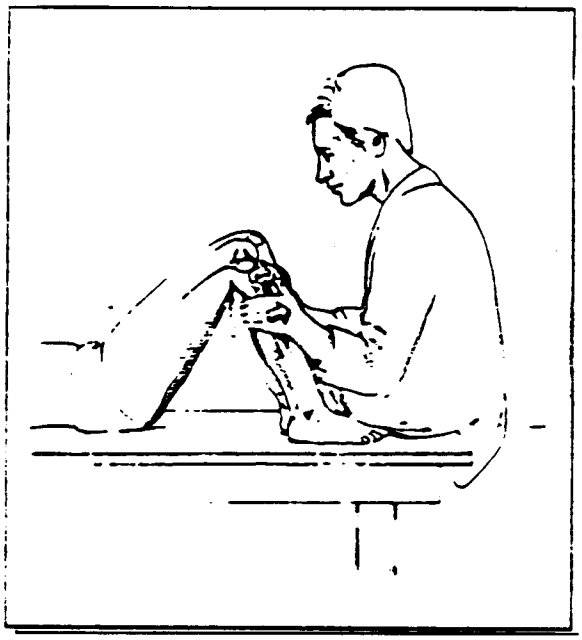
Lateral Meniscus



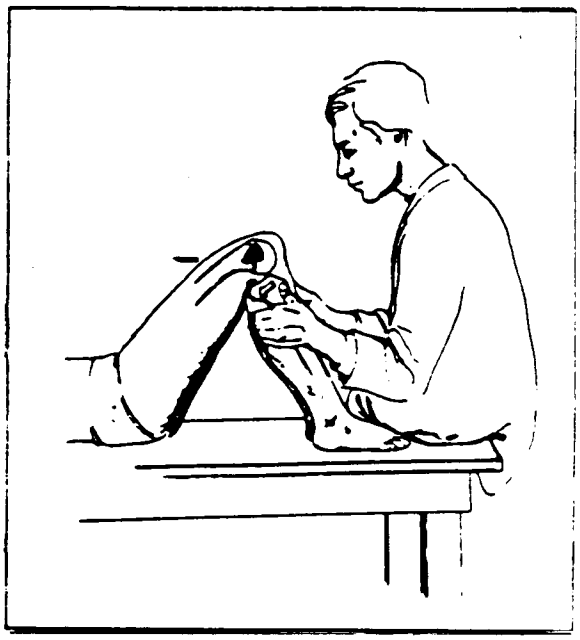
Medial Collateral Ligament



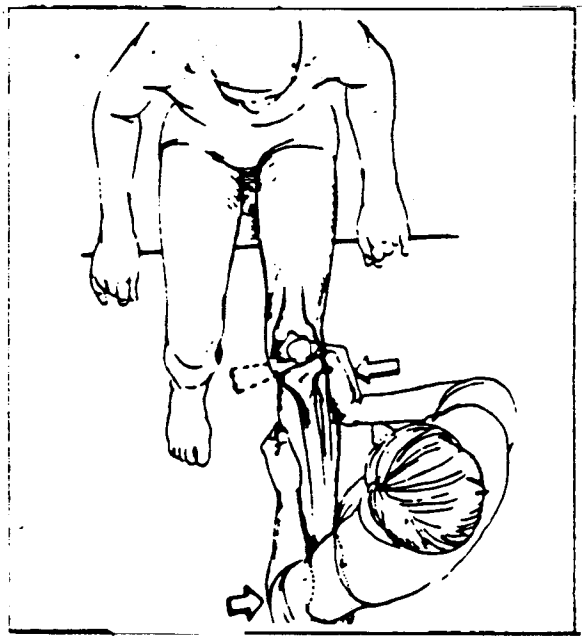
Lateral Collateral Ligament



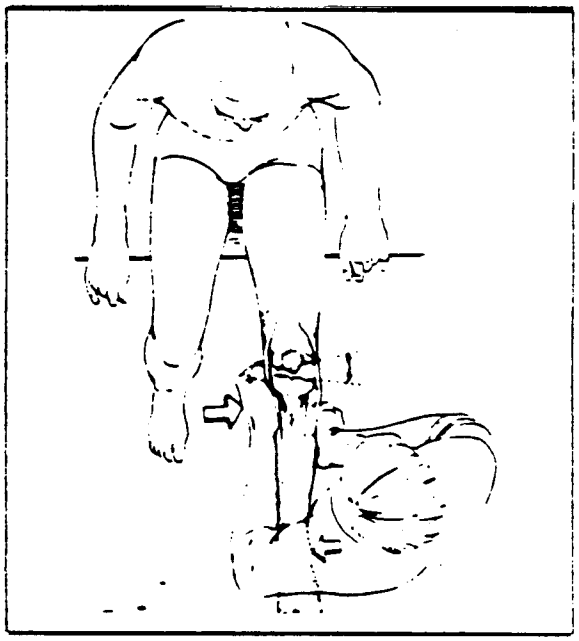
Anterior Draw Test



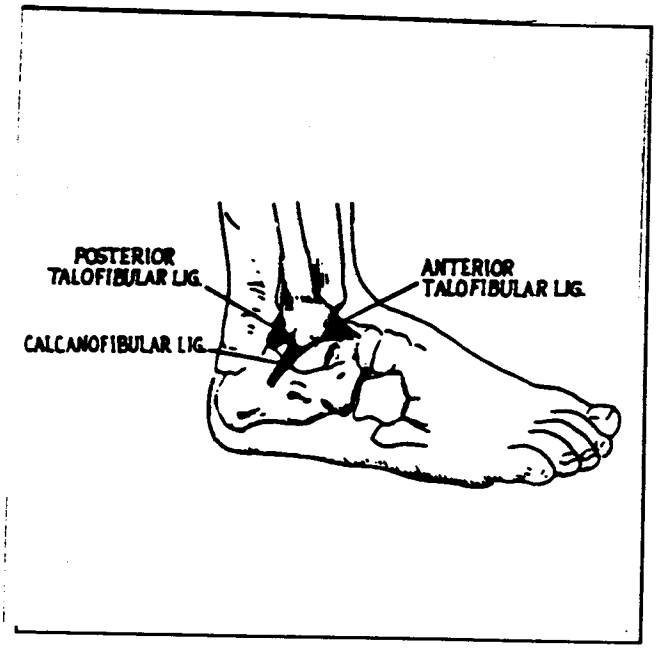
Posterior Draw Test



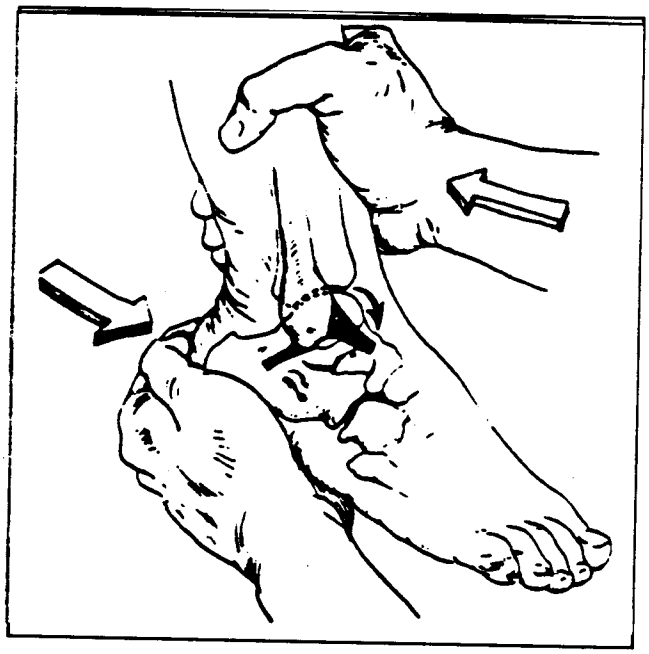
Valgus Stress



Varus Stress



Lateral Ankle



Draw Test

MUSCULOSKELETAL STRAINS OF THE EXTREMITIES

A. GENERAL CONSIDERATIONS

A strain occurs when a muscle or muscle tendon is stretched to a degree that a partial or complete rupture occurs. It may result from violent exertion or sudden unexpected movement. In contrast, a sprain is a tear or rupture of the fibers and ligaments supporting a joint.

B. ESSENTIALS OF DIAGNOSIS

1. Local pain and point tenderness overlying the site of the injury.
2. Spasm of the torn and surrounding muscles.
3. Swelling and discoloration overlying the injury site.
4. Loss of function due to pain and tear in the muscle or tendon.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Neurovascular tears.
2. Avulsion disorders.
3. If a complete rupture of a tendon or muscle occurs, this must be repaired ASAP to prevent permanent contracture.
4. Significant hemorrhage into the site.

F. TREATMENT

1. Ace wrap to produce a soft splint that will limit motion of the joint moved by the injured muscle, ensuring adequate circulation.
2. Cold packs at injury site and elevation of extremity for 24 hours.
3. Moist heat at in jury site after 24 hours.
4. Motrin or Indocin.
5. Weight bearing should be prohibited in a severe strain: limit weight bearing in a moderate strain with crutches if lower extremity is involved.

D. DISPOSITION

1. If fracture is suspected, strain is severe, or complete rupture of tendon or muscle is present, refer to a Medical Officer.

OSTEOARTHRITIS

A. GENERAL CONSIDERATION

Osteoarthritis is the most common form of arthritis. It's also the most common musculoskeletal condition in patients older than 50.

It is characterized by focal degeneration of joint cartilage and new bone formation at the base of the cartilage lesion and the joint margins. The two types are primary osteoarthritis (wear and tear) and secondary osteoarthritis (post traumatic, endocrine diseases, etc.).

B. ESSENTIALS OF DIAGNOSIS

1. The most common sites are DIP and CMC joints of the hands, first MTP joints of the feet, hips, knees and lumbar and cervical spine.
2. Onset of pain is gradual, with involvement of one to a few joints. Patients are usually greater than 40 y/o.
3. The pain initially is brought on by use and relieved by rest. As the disease progresses, the pain is also present at rest.
4. A small amount of short lasting AM stiffness.
5. No systemic symptoms.
6. Joint tenderness, swelling and warmth may be present.
7. Early in the disease, you may see pain with weight bearing and no pain with passive ROM.
8. Later in the disease you see joint crepitus and decrease in ROM.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Disabling involvement of affect joints.

F. TREATMENT

1. Rest the involved joints.
2. Apply local heat.
3. Give Aspirin or Indomethacin

G. DISPOSITION

1. If condition is chronic or unresponsive to conservative management, refer patient to Medical Officer.

RHEUMATOID ARTHRITIS

A. GENERAL CONSIDERATIONS

Rheumatoid arthritis is a chronic inflammation of the peripheral joints, leading to progressive destruction of articular surfaces. The etiology is unknown, but it is probably an autoimmune disorder.

B. ESSENTIALS OF DIAGNOSIS

1. Insidious onset with progressive involvement of new joints, with the initial joints remaining involved.
2. Symmetrical involvement of the joints is typical, characteristically involving the small joints of the hands and feet.
3. Tenderness, swelling, and warmth of the inflamed joints.
4. Rapid development of joint deformities.
5. Morning stiffness is common, with pain and restriction of motion decreasing as the day progresses.
6. The patient has fatigue, weight loss, anemia and weakness.
7. About 25% of the patients have rheumatoid nodules. These are firm, nontender, movable modules usually over the extensor' surface of the fingers or elbows.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Flexion contractures.

F. TREATMENT

1. Aspirin 2 - 3, 300mg tablets QID with meals (Use enteric coated or buffered tablets).
2. Give antacids to counter gastric side effects of Aspirin.
3. Nonsteroidal anti-inflammatory medications, such as Indomethacin and Ibuprofen.

G. DISPOSITION

1. Refer patient to Medical Officer for evaluation.

TENDINITIS & TENOSYNOVITIS

A. GENERAL CONSIDERATIONS

Tendinitis and tenosynovitis are inflammations of the tendon or tendon sheath, respectively which may be secondary to systemic diseases (rheumatic arthritis or gout), severe or repeated trauma, overexercise or infectious origin.

B. ESSENTIALS OF DIAGNOSIS

1. The hallmark of this is pain on motion of the affected tendon unit against resistance.
2. Local swelling, warmth and tenderness to palpation are usually present. This depends on the location of the tendon/tendon sheath.
3. Redness may be present depending on the depth of the tendon.
4. The tendon sheath may be dry and irregularly contoured, causing a friction rub on movement.

C. LABORATORY TESTS

1. None.

D. LABORATORY FINDINGS

1. None.

E. COMPLICATIONS

1. Deformity or loss of motion requiring surgical intervention.
2. Calcific deposits.

F. TREATMENT

1. Immobilize the affected part.
2. Local heat.
3. ROM exercises when pain tolerates this. This prevents a permanent decrease in ROM.
4. ASA 0.6mg q 4 hrs as tolerated.
5. Indocin 50 mg TID (x 5 days) if the ASA is not working.

G. DISPOSITION

1. For chronic or calcific cases, refer the patient to a Medical Officer.
2. Obtain orthopedic consultation when possible.